

ence. Several of them were exhibited at a meeting of the Literary Society of Madras some time ago, and were much admired for their beauty and accuracy.

The subjects for the present publication will be selected so as to present an agreeable variety, and most of them will be figured here for the first time.

The drawings will be lithographed both on quarto and royal octavo paper. The colouring will be finished under the author's own superintendence.

The letter-press will contain a full description of the species figured.

The work is proposed to be published by subscription. Subscribers' names received by Mr. Lizars, Engraver, Edinburgh.

We have, at the same time, received a specimen of one of the illustrations, which is well executed and carefully coloured.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

Feb. 22, 1842.—William Horton Lloyd, Esq., in the Chair.

The following "Monograph of *Crassatella*, a genus of Acephalous Mollusks (Family *Mactracea*)," by Mr. Lovell Reeve, was read.

The genus *Crassatella* was instituted by Lamarck for the purpose of associating certain bivalve mollusks that had been hitherto distributed amongst the *Mactræ* and the *Veneres*. Their shells exhibit an interesting peculiarity of character, differing from the former in being thick and solid, and for the most part covered with a strong brown epidermis; and from the latter in the position of the ligament. The genus, however, as introduced by Lamarck, was yet imperfect; it included five species that could not easily be distinguished from his *Amphidesmata*, and was therefore susceptible of farther division. With the view of uniting the intermediate species of these genera, a new genus was proposed by Deshayes, under the title of *Mesodesma*, and I have found great convenience in adopting it in my 'Systematic Conchology.' Thus out of eleven species described by Lamarck as *Crassatellæ*, six only can be allowed to remain. Since his time, however, several new and important species have been discovered; two have been described by Sowerby in the 'Proceedings' of this Society, one by the same author in his 'Appendix to the Tankerville Catalogue,' and I have now the pleasure of exhibiting *ten* more, which I believe to be entirely new to science.

To make this a complete monograph, I mention all the species, distinguishing the new ones by the addition of the specific characters.

1. *CRASSATELLA CASTANEA*. *Crass. testâ ovato-trigona, gibbosa, umbonibus planè erosis, epidermide castanea, quasi politâ nitente, induta; intus subfusca; latere antico rotundato; postico angulifero, abrupto.* Reeve, Conch. Icon.* *Crassatella*, pl. 1. f. 3.

* Having made accurate drawings of the *Crassatellæ*, with a view to publication at some future period, I venture to refer to a pictorial and descriptive repertory of species now in course of preparation, to be entitled "CONCHOLOGIA ICONICA."

Long. $3\frac{1}{2}$; alt. 3 poll. Mus. Stainforth, Saul, Walton.

Hab. ad oras Novæ Hollandiæ.

The *Crassatella castanea* is the largest and perhaps the best defined species of the genus; its shell is covered with a shining horny epidermis, and both valves are singularly eroded at the umbones. I know of three specimens of this fine shell, and each of them fully exhibit this last-mentioned peculiarity.

2. *CRASSATELLA KINGICOLA*. Lamarck, Anim. sans vert., vol. v. p. 481; Reeve, Conch. Icon. *Crassatella*, pl. 1. f. 5.

Hab. ad oras Novæ Hollandiæ. Mus. Stainforth.

A specimen of this species, in the possession of the Rev. Mr. Stainforth, is the only one that I have seen.

3. *CRASSATELLA DECIPIENS*. *Crass. testâ ovatâ, subgibbâ, epidermide fuscâ indutâ, vividè radiatâ, radiis ab umbonibus ad margines scapè extensis; latere antico subangulato, striis brevibus ornato; postico subquadrato, parùm productiore.* Reeve, Conch. Icon. *Crassatella*, pl. 1. f. 4.

Long. $2\frac{1}{2}$; alt. $2\frac{1}{8}$ poll.

Hab. ad oras Novæ Hollandiæ.

Crassatella Kingicola, Nobis (falsò), Conch. Syst., vol. i. pl. 44. f. 3.

This species, which has lately arrived from New Holland in great abundance, has been received by most collectors as the *Crassatella Kingicola* of Lamarck; I moreover regret that it has been erroneously figured under that title in my 'Conchologia Systematica.' This error was kindly pointed out to me by Mr. Sowerby, and I am now satisfied that the shell of Lamarck's *Crassatella Kingicola*, which is accurately figured in the 'Genera of Recent and Fossil Shells,' is one of extreme rarity. Mr. Cuming possesses a gibbous variety of the *C. decipiens*, but it is not sufficiently distinct to demand especial notice. Mr. Owen is we believe engaged upon the anatomy of this species.

4. *CRASSATELLA PULCHRA*. *Crass. testâ ovato-trigona, depressâ, obsolete radiatâ, epidermide crassâ, fibrosâ, molliusculâ, indutâ; transversim sulcatâ, sulcis profundis, regularibus; latere antico rotundato; postico subangulato.* Reeve, Conch. Icon. *Crassatella*, pl. 3. f. 16.

Long. $2\frac{7}{8}$; alt. 2 poll. Mus. Cuming, Stainforth.

Hab. ad oras Novæ Hollandiæ.

De Blainville appears to have figured this shell in his 'Manuel de Malacologie' as the *Crassatella sulcata* of Lamarck; but it is of a totally different form, nor does it agree with the *Maetra sulcata* of Bruguière, to which he refers in the 'Encyclopédie Méthodique'; I therefore now propose to distinguish it by the above new title. The shell of the *Crassatella sulcata* approaches rather in form to that of the *Crassatella rostrata*, the anterior side of which is specially characterized as being *productiore*; the grooves too in that species run irregularly across the valves, and are not parallel with the lines that mark the increase of growth. The shell of the *Crassatella pulchra*, on the contrary, is of a plain triangular form; the posterior

side is but slightly produced, the grooves are very deep, and they run parallel with the lines of growth.

5. *CRASSATELLA LAPIDEA*. *Crass. testá ovato-orbiculatá, epidermide fibrosá indutá, umbonibus parvis, striatis; intùs subfuscá; latere antico rotundato, abrupto, striis nonnullis brevibus ornato; postico subangulato.* Reeve, Conch. Icon. Crassatella, pl. 2. f. 7.

Long. $1\frac{3}{4}$; alt. $1\frac{1}{4}$ poll. Mus. Cuming.

Hab. ad insulam Negros, Philippinarum.

Mr. Cuming met with one true pair only and a few odd valves of this species at the Island of Negros in coarse sand in seven fathoms water. The shell somewhat resembles that of the *Crassatella donacina*, but may however be readily distinguished.

6. *CRASSATELLA DONACINA*. Lamarck, Anim. sans vert., vol. v. p. 481. Reeve, Conch. Icon. Crassatella, pl. 3. f. 19.

This shell, figured in Delessert's 'Recueil de Coquilles,' pl. 4. f. 1, *a, b*, is extremely rare. The only specimens I have seen are in the collections of Miss Saul and the Rev. Mr. Stainforth.

7. *CRASSATELLA UNDULATA*. Sowerby, Proc. Zool. Soc., 1832, p. 56; Reeve, Conch. Icon. Crassatella, pl. 1. f. 2. *a*. and *b*.

8. *CRASSATELLA ANTILLARUM*. *Crass. testá trigono-ovatá, vix gibbosá, crassá, epidermide fibrosá indutá; intùs brunneá, propè ad marginem albicante; umbonibus subdepressis, leviter undulatis; latere antico rotundato, postico subangulato.* Reeve, Conch. Icon. Crassatella, pl. 2. f. 8.

Long. $3\frac{1}{8}$; alt. $2\frac{1}{4}$ poll. Mus. Cuming.

Hab. ad insulam Margaritta, Antillarum.

Mr. Cuming informs me that this beautiful species was dredged up in the pearl-fisheries at the island of Margaritta in the West Indies. It is erroneously figured in Delessert's 'Recueil de Coquilles' as the *Crassatella rostrata* of Lamarck. The rich chocolate colour of the interior of this shell is very remarkable, approaching somewhat in that respect to that of the preceding species.

9. *CRASSATELLA JUBAR*. *Crass. testá subovatá, valdè inæquilaterali, gibbosá, extùs vividè radiatá, radiis ferruginosis, ab umbonibus, jubarum similitudine, divergentibus; ad utrumque latus irregulariter multistriatá; epidermide fuscá, subquassá, sparsim indutá; intùs albá, ad extremitatem posticam brunneá; umbonibus plicatis, compressis; latere antico inclinato, rotundato, postico arcuato, elongato, acuminato.* Reeve, Conch. Icon. Crassatella, pl. 2. f. 11.

Long. $2\frac{1}{8}$; alt. $1\frac{3}{8}$ poll. Mus. Cuming.

Hab. ad oras occidentales Novæ Hollandiæ.

A single specimen of this fine shell was procured by Mr. Cuming in Hamburg; it had been received from that prolific portion of the globe above noted, and has made a valuable addition to the genus. It has the general form of the *C. gibbosa*; the sides are profusely striated, and the entire surface is richly illumined with brownish rays, diverging like solar beams from the umbones to the margin.

10. *CRASSATELLA SULCATA*. Lamarck, Anim. sans vert., vol. v. p. 481; Reeve, Conch. Icon. Crassatella, pl. 2. f. 6. *a.* and *b.*

Hab. ad oras Novæ Hollandiæ.

This is another very rare species; I know of two or three odd valves, but only one true pair, which is in Mr. Cuming's collection.

11. *CRASSATELLA ROSTRATA*. Lamarck, Anim. sans vert., vol. v. p. 481; Reeve, Conch. Icon. Crassatella, pl. 2. f. 10.

Hab. ad insulam Ceylon.

The figures which have been just published by M. Chenu in Delessert's 'Recueil de Coquilles' as the *Crassatella rostrata* of Lamarck, are certainly not that species, nor do they at all correspond with his description of it, particularly in that part which says *intus margine crenulato*; I have moreover every reason to believe that they are drawn from specimens of the new species from the island of Margarita, which we have called *Crassatella Antillarum*. The *Crassatella rostrata* is a well-known species from Ceylon, and the only large one of the genus that is distinctly crenulated at the margin.

12. *CRASSATELLA GIBBOSA*. Sowerby, Proc. Zool. Soc., 1832, p. 56; Reeve, Conch. Syst., pl. 44. fig. 2; and Conch. Icon. Crassatella, pl. 1. f. 1. *a.* and *b.*

13. *CRASSATELLA CORBULOIDES*. *Crass. testâ suborbiculatâ, valdè gibbosâ, umbones versùs profundè sulcatâ, epidermide fuscâ indutâ; latere antico rotundato, postico producto, subitò rostrato.*

Reeve, Conch. Icon. Crassatella, pl. 2. f. 9.

Long. $1\frac{3}{4}$; alt. 1 poll. Mus. Stainforth.

Hab. ——— ?

The title of *corbuloides* is selected for this new and very characteristic species, on account of its short gibbous form; the anterior side is suddenly beaked, like some of the *Corbule*, and cannot well be confounded with the *Crassatella gibbosa*, to which it is nearly allied.

14. *CRASSATELLA RADIATA*. Sowerby, App. Tank. Cat.; Reeve, Conch. Syst., pl. 44. fig. 1; and Conch. Icon. Crassatella, pl. 3. f. 12.

Hab. ad insulam Singapore.

This species, originally described by Sowerby from a specimen belonging to the late Earl of Tankerville, was found by Mr. Cuming at the island of Singapore, in coarse sand at seven fathoms' water.

15. *CRASSATELLA SUBRADIATA*. Lamarck, Anim. sans vert., vol. v. p. 482; Reeve, Conch. Icon. Crassatella, pl. 3. f. 15. *a.* and *b.*

I have little doubt but that the shell now before me, from the collection of the Rev. Mr. Stainforth, is the *Crassatella subradiata* of Lamarck. Unfortunately there does not exist any drawing of it, nor does it appear in Delessert's 'Recueil de Coquilles,' in which M. Chenu professes to illustrate all the species described by Lamarck that have not yet been figured.

16. *CRASSATELLA CONTRARIA*. Lamarck, Anim. sans vert., vol. v. p. 481; Reeve, Conch. Icon. Crassatella, pl. 3. f. 18. Mus. Stainforth, Saul.

Venus contraria, Gmelin.

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X

Venus divaricata, Chemnitz.

Crassatella divaricata, D'Orbigny.

Hab. ad insulam Lancerotte, Canariarum.

I have only seen three specimens of this very interesting shell. The above locality is quoted from D'Orbigny's 'Mollusques des Iles Canaries;' it is the only species of *Crassatella* he found in that district.

17. *CRASSATELLA ZICZAC.* *Crass. testâ subtrigona, depressâ, luteolâ, epidermide tenui indutâ; radiis binis interruptis ab umbonibus ad margines divergentibus, lineis roseis, flexuosis, ubique pictâ; intus subrosacâ; latere antico breviculo, rotundato; postico subangulato; lunulâ utrinque radiis roseis vividè virgatâ.* Reeve, Conch. Icon. *Crassatella*, pl. 3. f. 13.

Long. $1\frac{1}{8}$; alt. 1 poll. Mus. Cuming.

Hab. ad insulam Corrigidor, Philippinarum.

This species was found by Mr. Cuming at the island of Corrigidor, in coarse sand at six fathoms water; he possesses it in several stages of growth, all of which are covered with fine rose-coloured zigzag lines.

18. *CRASSATELLA TRIQUETRA.* *Crass. testâ trigonâ, solidâ, rosacâ, epidermide tenui indutâ, transversim striatâ; maculis roseis irregularibus vividè pictâ; intus rosacâ, versus marginem albicante; margine tenuiter crenulato; lateribus subrectis, vix rotundatis; lunulâ utrinque magnâ, radiis roseis vividè virgatâ.* Reeve, Conch. Icon. *Crassatella*, pl. 3. f. 14.

Long. $\frac{7}{8}$; alt. $\frac{6}{8}$ poll. Mus. Stainforth, Cuming, &c.

Hab. —?

I am unfortunately ignorant of the locality of this pretty little species; it is of a warm rose-colour, radiately spotted with deep pink, and is of a solid triangular form.

19. *CRASSATELLA ORNATA.* *Crass. testâ trigonâ, subdepressâ, pallidâ, lineis spadiceis brevibus, longitudinalibus, variè pictâ, transversim striatâ; intus albdque brunneâ, margine tenuiter crenulato, latere antico rotundato, postico flexuoso, angulato.* Reeve, Conch. Icon. *Crassatella*, pl. 3. f. 17.

Mesodesma ornata? Gray.

Long. $1\frac{1}{8}$; alt. $\frac{7}{8}$ poll. Mus. Stainforth.

Hab. —?

A specimen of this shell, in the collection of Miss Saul, is the only one we have seen at present. The above title has been decided upon because there is an inaccurate figure of it in Griffith's 'Cuvier's Animal Kingdom' with the name of *Mesodesma ornata*; it is not accompanied with any description, but we believe it to be intended for this shell.

March 8.—William Yarrell, Esq., Vice-President, in the Chair.

Mr. Waterhouse called the attention of the Members to two new species of Marsupial animals from South Australia, and forming part of a collection presented to the Society by J. B. Harvey, Esq.; one

belonging to the genus *Phascogale*; and the other, of which only an imperfect skin had been procured, Mr. Waterhouse observed, was evidently a new species of *Perameles*, nearly allied to the *P. Lagotis* of Mr. Reid, but differed from that animal in having much smaller ears, a less hairy tail, and in being of a brown colour above, pencilled with white. The fur is dense and very soft; on the upper part of the body it is of a slate-grey colour next the skin; each hair of the ordinary fur is brownish white towards the apex, and shaded into deep brown at the point. The longer and less soft hairs are very broadly annulated with white near the point, and black at the point. The fur on the under parts of the body is white—rather impure; and next the skin it is tinted with palish grey. On the side of the body and head a yellowish hue is observable. The ears are of moderate size, rather broad, and well clothed with hairs; on the inner side these are of a dirty white colour, slightly tinted with yellowish, and so are those on the outer side, excepting towards the margin, where they are of a brownish black hue. The tail is imperfect; it must have been, however, longer than in any known *Perameles* (excepting the *P. Lagotis*), the part attached to the skin measuring eight and a half inches. It is well clothed with hairs, which completely hide the skin, though they are rather short: on the upper part they are of a rich brown colour, excepting towards the apex, where they are longer and entirely white; on the under side they are dirty white. The feet are unfortunately wanting. The length of the head and body is about sixteen inches, and the ear measures about one inch in length.

Mr. Waterhouse gave to this animal the name of its discoverer, a Corresponding Member of the Society, and one to whom the Society is indebted for very many valuable collections. Its principal characters may be thus expressed:—

PERAMELES HARVEYI. *Per. pilis mollibus; corpore suprà fusco alboque irrorato, infrà albo; caudâ longâ, suprâ fuscâ, infrâ et ad apicem sordidè albâ.*

Hab. Port Adelaide.

The *Phascogale* presents the following characters:—

PHASCOGALE ALBIPES. *Phasc. pilis brevibus et permollibus; corpore suprâ nigro et flavescenti-irrorato, infrâ albo; pedibus albis; caudâ longâ suprâ fuscâ, infrâ fusco-albâ.*

	unc. lin.
Longitudo ab apice rostri ad caudæ basin . . .	3 9
————— ad basin auris . . .	0 10½
————— <i>auris</i>	0 7
————— <i>caudæ</i>	3 2
————— <i>tarsi digitorumque</i>	0 8¼

Hab. Port Adelaide.

The fur in this little animal is shorter than in other species of *Phascogale* hitherto described, and extremely soft; it is of a deep slate-grey colour next the skin, but externally, on the upper parts of the body, the colour is brownish, a tint produced by the admixture of black and yellow, the hairs being annulated with the latter colour

near the point, and black at the point. The under parts of the body are greyish white, each hair being deep grey and tipped with white. The feet are white. The tail is furnished throughout with very minute hairs. It approaches most nearly to the *P. murina*, but differs in being rather larger, in general colouring, and especially in having the tail of a dark colour, and not white, as in that species.

March 22.—William Horton Lloyd, Esq., in the Chair.

The following paper, by Mr. Lovell Reeve, entitled "Descriptions of new species of Shells, principally from the collection of Hugh Cuming, Esq.," was read.

BULIMUS SMARAGDINUS. *Bul. testá oblongo-ovatá, nitidá, viridí, apicem versus subpurpureá; fasciá albá per anfractuum suturas decurrente; aperturá rotundato-ovali, peristomate albo, reflexo.*

Reeve, Conch. Syst., vol. ii. pl. 173. fig. 6.

Hab. ad insulam Mindanao, Philippinarum.

Long. $2\frac{3}{8}$; lat. $1\frac{3}{8}$ poll.

The whorls of this shell exhibit a pleasing gradation of colour; commencing at the apex in deep purple, it passes through pale yellow to a bright sea-green.

HELIX VALTONI. *Hel. testá ovatá, depressá, anfractibus ventricosiusculis, ultimo supernè productiore; rubido-fuscá, radiis longitudinalibus obsolete pictá; epidermide tenui, peculiariter maculosá, indutá; aperturá subquadrato-ovali, marginibus nigerrimis, disjunctis; labro acutissimè reflexo.* Reeve, Conch. Syst., vol. ii. pl. 166. fig. 23.

Hab. ad insulam Ceylon.

Long. $2\frac{1}{4}$; lat. $1\frac{5}{8}$ poll.

I name this remarkable shell in honour of my friend William Walton, Esq., a zealous and assiduous collector; it is of a dark ruddy brown colour, and has a very black polished lip; it is, however, especially characterized by its curiously speckled epidermis.

SIPHONARIA CHARACTERISTICA. *Siph. testá orbiculari, conicá, extùs longitudinaliter costatá, costis irregularibus, interstitiis nigricantibus, apicem versus valdè decorticatis; intùs nigerrimo-fuscá, impressione musculari scabrá, profundè notatá; impressione siphonali characteristicè imbutá.* Reeve, Conch. Syst., vol. ii. pl. 138. fig. 3.

Hab. In sinu Panamensi.

Long. $2\frac{1}{4}$; lat. $1\frac{7}{8}$; alt. $1\frac{1}{4}$ poll.

This shell approaches very closely to the *Siphonaria gigas* of Sowberby; we venture, however, after a close comparison between specimens of each in different stages of growth, to pronounce it a distinct species. It is of a more irregular form, and the separate impressions of the muscle and the siphon are remarkably distinct.

PARMOPHORUS CORRUGATUS. *Parm. testá elongato-quadratá, tenui, depressá, extùs leviter corrugatá; vertice obtuso, propè ad partem posticam inclinato.* Reeve, Conch. Syst., vol. ii. pl. 139. fig. 1.

Hab. ad insulam Madagascar.

Long. $1\frac{1}{2}$; lat. $\frac{3}{4}$ poll.

Principally distinguished by the position of the vertex, which is more posterior than in any other species; the wrinkled sculpturing upon the outer surface is also a well-defined peculiarity.

PARMOPHORUS INTERMEDIUS. *Parm. testá ovatá, elevatiusculá, anticè attenuatá; extùs radiis asperrimis, quasi serratis, ornatá; vertice prominulo, incurvo; margine crenulato.* Reeve, Conch. Syst., vol. ii. pl. 139. fig. 5 and 6.

Hab. ad insulam Bohol, Philippinarum.

Long. $\frac{3}{4}$; lat. $\frac{3}{8}$ poll.

This beautiful little shell, which may be considered as intermediate in its generic characters between the *Parmophori* and the *Emarginulae*, is most elegantly radiated on the outer surface, and the only species of this genus at present known that is serrated at the margin.

EMARGINULA CONOIDEA. *Emarg. testá conoideá, albicante, extùs striis numerosis creberrimè radiatá; vertice centrali, acuto; margine valdè crenato, sinu marginali profundè inciso.* Reeve, Conch. Syst., vol. ii. pl. 140. fig. 7.

Hab. — ?

Long. $\frac{7}{8}$; lat. $\frac{5}{8}$; alt. $\frac{1}{2}$ poll.

A very characteristic shell, in the collection of William Walton, Esq.

CALYPTRÆA CINEREA. *Cal. testá suborbiculari, extùs a vertice radiatá, radiis spinis parvis numerosis irregulariter ornatis; intùs cinereo nitente, cyatho magno, albo, subpellucido, lateraliter flexuoso.* Reeve, Conch. Syst., vol. ii. pl. 144. fig. 4.

Hab. Cape Horn.

Diam. $1\frac{3}{4}$; alt. 1 poll.

An immense number of these shells, just brought to England, were found attached to a single log of wood floating off Cape Horn. The interior is lined with a very dark, ashy, highly polished enamel, but the cup is of a pure transparent white, offering a remarkably rich contrast of colour. The exterior of the shell is irregularly covered with numerous small spines, becoming, as in most of the *Calyptrææ*, obsolete with age.

April 26.—William Horton Lloyd, Esq., in the Chair.

The following "Description of a new Dorsibranchiate Gasteropod, discovered at Madeira," by the Rev. R. T. Lowe, was read.

Class MOLLUSCA.

Ord. GASTEROPODA.

Fam. NUDIBRANCHIÆ (*Les Tritoniens*, Lam.).

Gen. PEPLIDIA.

Char. Gen.—*Corpus* limaciforme, repens, oblongum; posticè compresso-triquetrum, dorso abruptè (ut in *Scyllæä*) cristatum s. alato-carinatum; apice attenuato, acuto. *Caput* anticè (ut in *Thethye*, L.) veliferum; velo semicirculari, margine fimbriato-lacero, ciliolato: ore inter labia buccalia subtùs, simplici. *Tentacula* (ut in *Doride*) duo. *Orificium* generationis ad colli dextrum. *Branchiæ* diplo-

morphæ: s. in medio dorsi (ut in *Doride*) circa anum stellatim ramosæ, arbusculiformes, ramis pectinato-ciliatis; et per latera utrinque (ut in *Tritonia Thethyve*) longitudinaliter biseriata, conico-papilliformes; papillis apice subdivisis, ciliatis.

Obs. *Corpus* totum glabrum, læve, subpellucidum. *Oculi* nulli.

Spec. *Peplidia Madera*, nob.

Hab. in mari Maderensi-atlantico, inter rupes littorales in aquis æstu relictis; rariss.

A single example of this beautiful and extremely interesting mollusk was discovered on the 24th of April, 1841, by Dr. Lister, in a pool left by the tide amongst a reef of rocks called the Gorgulho, situate a little to the west of Funchal. It presents a combination of generic characters, by which, if it approximates in each apart by turns to *Doris*, *Thethys*, *Tritonia*, and *Scyllæa*, it differs notably from all. The large dorsal star-like tuft of branchiæ, and the tentacles, resemble those of *Doris*; but it differs totally in other characters: the veil before the head, though smaller and differently fringed, together with the rows of branchiferous papillæ down the back or sides, bringing it somewhat nearer *Thethys*, from which it is essentially distinguished, as it is also from *Tritonia* and *Scyllæa*, by its Doridian character of the ano-dorsal five-branched rose or star of branchiæ. And if agreeing with the last of these two genera in the carinate or crested tail, it is at once distinguished by the presence of the frontal veil.

The whole upper surface of the animal, which is from one inch and a half to two inches and a half long, about one-third of an inch broad and half an inch high, is of a pale dull red, mottled or freckled with brighter orange-red and yellow, and thickly speckled all over with dark chestnut-brown spots and dots, which are larger and sub-confluent in two sublateral darker lines or rows, meeting behind the branchial star upon the back, and smaller on the sides and veil. The tentacles above, and the foot alone beneath are immaculate, the latter being pale pellucid flesh-colour, with the extreme edges yellow.

The edges of the veil, and the tips of the dorsal or sublateral branchiferous papillæ are fimbriato-ciliate. Of the latter, there are two rows on each side: the lower consisting each of six small and inconspicuous or obsolete papillæ; the upper, each of three much larger and more elongate or subcylindric bodies, placed at equal distances from one another, two in advance, and the third a little behind the ano-dorsal rose. The head or apex of each of this third or last pair forks into two parts, one of which is subdivided or ciliferous, like the other pairs; the other branch of the fork is simple and clavate, ending abruptly in a dark red sort of knob or button. The orifice of generation is on the right side of the neck, beneath the first of the upper row of branchiferous papillæ. During the animal's life it appeared simple, but on contraction after death it was found to be composed of two apertures close together; the male organ being exerted from the anterior.

The ano-dorsal branchial tuft or star is very large, and placed at

the top of a strong hump or protuberance; the vent being in its centre, as in *Doris*. It appears, in general, equally five-rayed; but assumes occasionally, as it also does sometimes in *Doris*, the appearance of being composed of two bifurcated lateral, and a simple anterior branch or ray. Its divisions are regularly and beautifully pectinate. The caudal fin-like crest begins a little behind it; and its edge is crisped or irregularly notched and plicate, and even obsoletely ciliate here and there, or fimbriate. In swimming, this crest is stiffly expanded into a broad fin, ending abruptly behind, as in Cuvier's fig. 4. of *Scyllæa pelagica* (Mém. des Moll.), but with the edge even or entire.

In a glass of sea-water, in which this animal lived more than six weeks, it had the usual habits of a *Doris*, but these with more activity: swimming about violently when disturbed or when provided with a fresh supply of water, in which operation the hind part of the body, with the crested fin-like tail, is lashed from side to side with a strong and regular sculling motion; the fore-part, with the head or veil expanded also to its full dimensions, being at the same time beat with equal force and regularity in a contrary direction, or obliquely upwards and downwards, stroke for stroke; these parts (the veil and crest) performing thus alike the office of true fins. At night, especially when thus in motion, it appeared most brilliantly phosphorescent; the light flashing progressively but very rapidly along the body, especially from all the branchial tufts and the edges of the veil and crest. At other times it remained quiescently adhering to the sides of the glass, or moving slowly up and down as if in search of food; seeming to use the veil as a feeler, but with the tentacles reflexed. Sometimes it crawled in the usual inverted posture along the surface of the water. It is by no means a shy or timid animal.

After five or six days, it deposited in the night-time a pale orange-coloured long and narrow riband of eggs, resembling a tape-worm, and loosely coiled up spirally on the side of the glass, to which it was partially attached by one edge. This egg-band was about three inches and a half long and two lines broad, narrowing a little towards one end. On two subsequent occasions, at intervals of ten days or a fortnight, it again deposited two similar but smaller bands; after which, though apparently remaining in full vigour, it retained not more than two-thirds of its former bulk.

Its mode of swimming perfectly resembles that of the larva of the gnat so common in our English cisterns of rain-water.

The next paper read was from W. J. Broderip, Esq. In this paper the author proceeds with his descriptions of Shells brought to this country by H. Cuming, Esq.

In the second volume of the 'Zoological Journal' will be found my notice of the *Voluta aulica* of Solander, a shell which formed one of the principal ornaments of the Portland Museum, of that of M. de Calonne (in the catalogues of which it is noted as unique), of the Tankerville collection (in the catalogue of which Mr. Sowerby speaks of it as "an extremely scarce and fine shell; the only speci-

men we have seen"), and of my own cabinet, which is now in the British Museum.

Mr. Cuming has laid before me some Volutes which he brought from the Philippine Islands, and which, after a careful examination, I think must be referred to this scarce species. Not one of them, however, is identical with the variety in the British Museum (var. *a.*), which is still, as far as I know, unique.

Voluta aulica.

Var. *a.* Without nodules or bands, spotted with large red flakes : Mus. Brit. Figured in the Tankerville catalogue (G. B. Sowerby).

Var. *b.* Flesh-colour, subnodulous, girt with two broad rich red bands mottled with white ; spire mottled with red and white, apex coral-red. Length nearly 4 inches, breadth $1\frac{5}{8}$.

Var. *c.* Flesh-colour, nodulous, lineated longitudinally with close-set, red, somewhat undulated lines, mottled here and there with white, girt by two interrupted rich red bands ; spire mottled with red and white, apex coral-red. Length $4\frac{1}{2}$, breadth $2\frac{1}{8}$ inches.

Var. *d.* Nodulous, whitish, lineated with very close-set, delicate, pale yellowish undulated lines ; body whorl girt with two broad yellowish red bands mottled finely with the ground-colour. The upper band is bordered above with a row of rich dark brown spots approaching closely to black, each spot being placed upon a nodule : the lower edge of this band is serrated as it were, and each of the teeth is marked with a spot immediately under the upper spots, but more dashed and somewhat less intense. The upper edge of the lower band is marked in a similar manner, but the spots are less defined. Above the shoulder of the body whorl is a band of similar colour, with its lower edge dashed with markings of the same colour as those which ornament the other bands, and at similar intervals. Two similarly coloured spots appear below the third and fourth nodule of the spire just above the suture of the body whorl, which suture almost hides one below the second of those nodules, counting from the edge of the lip. Upper part of the spiral whorls coloured after the same pattern, and brought out by the pale ground-colour of the lower part. Apex yellowish red. Length $3\frac{1}{2}$ inches, breadth $1\frac{1}{2}$.

This description will convey a very faint notion of one of the most beautiful shells I ever saw.

Var. *e.* Sharply nodulous. Dull red, blotched with flesh-colour ; a faint band, palest in the middle at intervals, girds the body whorl below the middle. The tips of the nodules are of the same colour as the blotches. Length $4\frac{1}{4}$ inches, breadth $2\frac{1}{8}$.

Var. *f.* Very sharply nodulous, the muricated nodules becoming high ridges extending almost half-way down the body whorl. Dull coral-red, with here and there a dash of whitish between the nodules. A very faint band may be traced below the middle of the body whorl, and on its darker upper and lower borders a few white spots appear at intervals as they approach the lip. Length $4\frac{2}{8}$ ths, breadth $2\frac{1}{8}$ inches.

Var. *g.* Bluntly but highly nodulous on the back, the nodules on

the lower side rather sharper. Whitish, lined longitudinally with close-set undulated livid lines blotched with clouds and dashes of livid red. A broad pale band girds the body whorl below the middle. Apex reddish white. Length $5\frac{1}{8}$; breadth 3 inches.

All these varieties, with the exception of var. *a*, are in the museum of Mr. Cuming.

CONUS VICTOR. *Con. testá subcylindraceo-conicá, flavá, maculis albis inspersá, fasciis 2 moniliformibus latis, nigro-brunneis vel brunneo-castaneis, latis concinnè ornátá; spiræ mediocris, pyramidalis, anfractibus excavatis longitudinaliter striatis, subcancelatis, apice subacuto.*

Long. $1\frac{2}{8}$; lat. $\frac{5}{8}$ poll.

Mus. Cuming, Harford.

Hab. ?

This brilliant Cone strikes the eye at once. The bright star-like spots with which the dark necklace-bands are interrupted and relieved, and the yellow ground-colour which takes the form of three alternating bands, render it attractive, and the more minutely it is examined the more it gains on the attention. The necklaces forming the moniliform bands, when looked at with a lens, present the appearance of some of the flattened platted chains executed in gold and silver, and the shell altogether is a choice piece of workmanship.

The species to which *Conus Victor* bears most resemblance are *Coni nobilis* and *Ammiralis*; but it comes much nearer to the last in shape and general character, differing, however, from it in the deeper excavation and sculpture of the spire, to say nothing of the discrepancy in the arrangement of the colouring, which in the only two specimens that I have seen is identical. Of these, the richest in colour is in the fine collection of Mr. Cuming, and the younger, but very perfect specimen, in the choice cabinet of the Rev. A. Harford.

A paper by Mr. Lovell Reeve, entitled "Descriptions of four new species of *Achatina*, a genus of Pulmobranchiate mollusks of the family *Colimacea*," was then read.

ACHATINA LACTEA. *Ach. testá oblongo-ovátá, solidá, intùs extùsque quasi fossili, lacteá, epidermide levidensi sparsim indutá; spirá regulari, anfractibus longitudinaliter striatis, lineisque minutis circumdati; aperturá suboblongá, labro solidiusculo.*

Reeve, *Conch. Syst.* vol. ii. pl. 177. fig. 6.

Long. $4\frac{1}{10}$; lat. $2\frac{1}{10}$ poll. Mus. Cuming, Stainforth.

Hab. Zanzibar.

This beautiful shell, which is in a perfectly live state, and covered with a slight scattered epidermis, is of a rich uniform cream-colour, without the least indication of any pattern; the whorls are very fully striated longitudinally, the striæ rather irregularly following the growth of the shell; and they are again characterized by having a number of fine lines running around the upper half of them in an opposite direction. The columella, the aperture, indeed the entire shell, both inside and out, is of rich cream-colour, and by this alone it cannot fail to be recognised.

ACHATINA TINCTA. *Ach. testâ oblongo-ovatâ, tenuiculâ, albicante, maculis grandibus longitudinalibus vividè tinctâ, epidermide flavidâ indutâ; spirâ parùm elatâ, apice obtuso, rosaceo; aperturâ oblongâ, albâ.*

Reeve, Conch. Syst. vol. ii. pl. 179. fig. 18.

Long. $3\frac{5}{10}$; lat. $1\frac{1}{2}$ poll. Mus. Cuming, Stainforth.

Hab. —? probably some part of Africa.

The *Achatina tincta* has a white shell covered with a yellowish epidermis, and it is singularly stained in a longitudinal direction with a deep morone colour. The stains take almost the form of bands in some places, but exhibit no degree of regularity.

ACHATINA KRANSII. *Ach. testâ ovatâ, vix ventricosâ, rufocastaneâ, epidermide durâ, nitente, indutâ; anfractibus, ultimo excipiente, longitudinaliter strigatis, strigis albis, nunc rectis, nunc sinuosis, distantibus, de suturis, longitudine variabili, porrectis; spirâ breviusculâ, apice obtuso; aperturâ ovatâ, albâ.*

Reeve, Conch. Syst. vol. ii. pl. 179. fig. 19.

Long. $2\frac{5}{4}$; lat. $1\frac{1}{2}$ poll. Mus. Cuming.

Hab. Cape Natal, coast of Africa.

I have named this species, at the request of Mr. Cuming, in honour of Dr. Krauss, who presented it to him on his arrival from Cape Natal, where he had formed a very interesting collection of shells. It is of a dark chestnut colour, and the last and penultimate whorls are marked with small zigzag stripes running from the sutures about half-way down them; they are distant and somewhat irregular.

ACHATINA PICTA. *Ach. testâ ovato-conicâ, lævi, luteâ, maculis, quasi fasciis, viridibus, conspersim ornatâ; anfractibus planiusculis, suturis maculis castaneis, transversis, vividè pictis; spirâ subelatâ, apice minuto, rosaceo; aperturâ orbiculari, flavidâ.*

Reeve, Conch. Syst. vol. ii. pl. 178. fig. 10.

Long. $1\frac{1}{2}$; lat. $\frac{3}{4}$ poll. Mus. Stainforth.

Hab. ad insulam Cuba, Indiarum Occidentalium.

This elegantly painted shell is allied to the *Achatina fasciata* in form, though it is certainly of lighter texture. The ground-colour is a bright yellow; there are a few bright green bands crossing the whorls at intervals; and the sutures of the whorls are ornamented throughout with a banded row of stained chestnut-coloured spots, for the most part touching each other. I only know of one specimen, and it exhibits as distinct an assemblage of characters as can well be imagined.

ENTOMOLOGICAL SOCIETY.

May 2nd, 1842.—W. W. Saunders, Esq., F.L.S., President, in the Chair.

Frederick Parry, Esq., exhibited two cases of splendid *Lepidoptera* from Assam and Jamaica, including specimens of *Papilio Agestor*, Gray, and *P. Cloanthus*, Westw.

Mr. A. White exhibited the remarkable cocoon of the North American *Bombyx crepuscularis*, Abb. and Sm., one end of which is closed with a valve.

Mr. Ingpen exhibited a specimen of the common white butterfly which had died in the act of passing from the larva to the chrysalis state.

Mr. Westwood exhibited specimens of the pupæ of a small species of *Cicada*, from the body of each of which one or several elongated appendages (*clavariæ*) had been produced. Likewise a numerous collection of the portable cases formed by various insects, chiefly *Lepidoptera* allied to *Oiketicus*, Guild., as well as numerous drawings of other kinds of cases, observing that in all the instances which had fallen under his notice the larva closes the mouth of the case by fixing the edges of the aperture where the front of the body has formerly protruded to the stems or leaves of trees, whereas in a drawing by Abbott in the British Museum, copied by Mr. Doubleday in the 'Entomologist,' pl. 1. fig. 15, the case of a species allied to *Oiketicus* is affixed by a stalk at the open end to the twig. Mr. Edward Doubleday, who was present, however, affirmed the correctness of the drawing in this respect.

Mr. Shuckard mentioned that he had found specimens in the indigenous collection of the British Museum of *Anthocopa Papaveris*, and of the genus *Ammobates*, Latr., both hitherto unrecorded as natives of this country. He also exhibited some fine hymenopterous insects from New Holland, including a gigantic species of *Megalyra*, Westw.

A paper was read by Mr. Westwood, containing descriptions of some new exotic *Lamellicorn* Beetles:—

Silphodes Indica, W. *S. castaneo-fusca, lateribus rufescentibus; elytris striato-punctatis, mediocriter setoso-marginatis; tibiis anticis extùs (et inter dentes) serratis; tarsis anticis simplicibus.* Long. corp. lin. $5\frac{1}{3}$.—Hab. East Ind. Mus. Melly.

Silphodes Madagascariensis, W. *S. piceo-castanea, lateribus pedibusque magis rufescentibus; capite anticè latiori; elytris minus ovatis, punctatis punctis majoribus, striisque tribus lævibus, punctis utrinque marginatis; lateribus longe setosis.* Long. corp. lin. $5\frac{3}{4}$.—Hab. Madagascar. Mus. Melly.

Silphodes dubia, W. *S. nigricans, lateribus vix setosis; prothorace lævi; elytris sub lente irregulariter punctatis, lineis tribus lævibus in singulo, punctis utrinque marginatis; tibiis anticis externè (et inter dentes) serratis.*—Long. corp. lin. $4\frac{1}{2}$.—Hab.——? Mus. Hope.

June 6, 1842.—W. W. Saunders, Esq., F.L.S., President, in the Chair.

Mr. Bond brought for distribution amongst the members, specimens of *Blethisa multipunctata* and *Callidium violaceum*, and Mr. Evans specimens of *Cleonis nebulosa* and a rare species of *Chryso-mela*.

Mr. S. Stevens exhibited a box of *Coleoptera* captured near Charlton, Kent, comprising several rare species.

Mr. Ingpen exhibited some branches of the spindle trees growing in Lincoln's-Inn-Fields, covered with multitudes of a species of *Coccus*.

Mr. F. Bond exhibited specimens of *Schizocerus pallipes* ♂ and *Cladius difformis* ♂, from Stanmore, Middlesex; also a beautiful variety of *Pæcilophasia marginata*. He also presented a number of cocoons of the small Honey-Moth.

Mr. Stephens exhibited larvæ of *Nyssia zonaria* bred from eggs received from Mr. Gregson.

Mr. Westwood exhibited a specimen of a species of *Typhlopone*, together with a female of a large species of Ant which had lost its wings, brought from Algiers by M. Lucas, to the former of which was attached the following note:—"Fourmie trouvée dans une fourmière qui par sa présence fait fuire les vrais habitans de la fourmière;" the wingless ant being one of the latter. This fact was of interest as determining the real nature of the genus *Typhlopone*, which Mr. Shuckard has regarded as composed of female *Dorylidæ*, but which Mr. Westwood considered to be true *Formicidæ*. He also exhibited specimens of a new species of *Cetoniidæ* from Madagascar, remarkable for the thick coating of coloured hairs on the hind tarsi [since figured in the 'Arcana Entomologica,' under the name of *Chromotilia diversipes*, W.]. He also exhibited the pupa of a species of *Eumenia*, a genus of butterflies, presented to him by M. Boisduval, which was attached by the tail as well as girt round the middle of the body, thus proving this anomalous genus to consist of gigantic *Polyommata*. Also a singular larva of some unknown *Coleopterous* insect [*Passalus*?] which possesses only four feet, the third or posterior pair being reduced to a very minute size.

The following memoirs were read:—

Description of a new British *Iulus*. By George Newport, Esq.

Iulus pilosus, Newp. *Very like Iulus terrestris, but smaller and more elegantly formed. Black, shining, segments fifty-six, deeply striated longitudinally, with the margin of each, more especially of all the posterior segments, set with fine white hairs; anal spine compressed and elongated.*

The chief characteristics of this species are the fringe of delicate hairs at the posterior margin of the segments, and the number of the latter, which amounts to fifty-six; while in *Iulus terrestris*, with which this species may readily be confounded, there are never more than fifty-one, and usually but fifty. It occurs in the neighbourhood of London at the end of May, but is not common.

Description of *Depressaria Gossypiella*, a small moth which is very destructive to the cotton plant in India. By W. W. Saunders, Esq., President.

The insect in question, which was communicated to the author by Dr. Royle, has committed great ravages in the cotton plantations at Broach in Western India, whence it was sent by Dr. Barn, superintendent of the government cotton plantations. In a commercial point of view, therefore, the means to be employed for its destruction are of importance. The eggs are deposited in the germen at the time of flowering, and the larva feeds on the cotton seed until the pod is ready to burst, a little previous to which it opens a round hole in the

side of the pod through which it descends to the ground, into which it burrows about an inch, where it assumes the pupa state.

Depressaria Gossypiella. *Dark fuscous brown, the head and thorax somewhat lighter in colour; fore wings with an undefined round blackish spot on the disk a little above the centre of a fascia of the same colour, crossing the wings a little above the apex, which itself is black; under wings silvery gray, darker towards the hinder margin.* Length $\frac{4}{10}$ ths of an inch.

Descriptions of new Australian *Chrysomelidæ* allied to *Cryptocephalus*. By W. W. Saunders, Esq., President.

The name *Anodonta* having been previously employed in zoology, the author proposes the name of *Idiocephala* in its stead, and describes the following new species:—

Sp. 7. *Idiocephala similis*, S. *Black; head, thorax and elytra deeply punctured, the latter with the surface undulating, somewhat fuscous at the apex; body beneath with the sides of the mesosternal region and of the abdominal segments silvery pilose; legs with a purplish iridescence.* Length $\frac{1\frac{4}{10}}$ th of an inch. Cabinet Ent. Club. Inhabits New Holland.

Sp. 8. *Idiocephala Tasmanica*, S. *Head rufous brown, with three round yellow facial spots; antennæ brown, darker at the tip, basal joint yellow; thorax rich rufous brown, margins yellow, and with two yellow longitudinal lines on the disk behind; elytra rufous brown, with the apex and margin round the scutellum yellow, each with four longitudinal carinæ; legs rufous brown.* Length $\frac{1\frac{2}{10}}$ th of an inch. Cabinet Ent. Soc. Lond. Inhabits Van Diemen's Land. C. Darwin, Esq.

Sp. 9. *Idiocephala Darwinii*, S. *Head black, with a large triangular patch in front; antennæ dusky brown, basal joints rusty brown beneath; thorax rufous brown, pitchy in front; elytra punctate-striate, dark metallic green, the apex luteous; legs horn-coloured; tarsi dusky.* Length $\frac{9}{100}$ th of an inch. Cabinet Ent. Soc. Lond. Taken near Sydney, N. S. Wales. C. Darwin, Esq.

Sp. 10. *Idiocephala semibrunnea*, S. *Head shining black; face rufous brown; antennæ black, basal joints rufous brown; thorax rufous brown; scutellum shining black; elytra brown, punctate-striate, margined with black, which ascends half-way along the suture; legs horny brown; tarsi pitchy.* Length $\frac{9}{100}$ th of an inch. Cabinet Ent. Soc. London. Taken near Sydney by Mr. Darwin.

Monograph of the genus *Nyctelia*. By G. R. Waterhouse, Esq., who exhibited the extensive collection of that group belonging to the Marquis de Breme, who was present at the meeting.

[This memoir has subsequently been published in the Proceedings of the Zoological Society.]

Descriptions of new species of insects collected at Adelaide in South-Western Australia by Mr. Fortnum. By the Rev. F. W. Hope.

Fam. BUPRESTIDÆ.

Sp. 1. *Stigmodera Fortnumi.* *Violacea, capite viridi, thorace*

- punctulato lateribus flavo-marginatis, medio purpurascenti; elytris ternisque latis fasciis flavis insignitis. Long. lin. 18, lat. lin. 8.*
- Sp. 2. *Stigmodera Parryi. Nigra, capite anticè argenteo; thorace nigro-punctato; elytris miniatis ad basin maculis ternis atris insignitis, binis externè humeralibus et elongatis, tertioque infra scutellum posito. Long. lin. 3½, lat. lin. 1.*
- Sp. 3. *Stigmodera Guerinii. Violacea, thorace nigro marginibus auratis; elytris anticè et posticè nigro-violaceis, in medio fascià latè flavà insignitis. Long. lin. 3, lat. lin. 1¼.*
- Sp. 4. *Conognatha Bremeri. Nigra, capite æneo, medio fortiter impresso; thorace bronzeo, disco punctatissimo lineà longitudinali, in medio vix impressà, foveà utrinque fortiter insculptà; elytris nigris, binis fasciis rubris. Long. lin. 9, lat. lin. 3½.*
- Sp. 5. *Conognatha coccinata, Hope. Coccinea, capite viridi antennisque concoloribus; thorace latè miniato maculis ternis viridibus insignito; elytris coccineis, tribus fasciis latè viridibus ornatis, primà basali duobus aliis ferè apicalibus. Long. lin. 5¼, lat. lin. 2.*

Fam. CANTHARIDÆ.

Tmesidera, Westwood in Guérin, Mag. Zool.

- Sp. 6. *Tmesidera violacea, Hope. Violacea, capite nigro; thorace nigro anticè capite latiori, angulis anticis rotundatis, posticis ferè rectis; elytris varioloso-rugosis; corpore infrà rubro. Long. lin. 5¼, lat. lin. 1¾.*
- Sp. 7. *Tmesidera assimilis. Nigra, antennis pedibusque concoloribus et nitidis; elytris rubro-testaceis lineis parùm elevatis. Long. lin. 4½, lat. lin. 1¼.*
- Sp. 8. *Tmesidera rubricollis. Nigra, thorace rubro, elytris atris subrugosis pedibusque concoloribus; corpore infrà nigro. Long. lin. 3, lat. lin. 1.*

Fam. CARABIDÆ.

- Sp. 9. *Calosoma Curtisii. Viride, thorace ferè glabro posticè fortiter impresso; elytris striato-punctatis et rugosis, punctisque impressis, in triplici serie ordinatis; infrà piceum; pedibus antennisque piceis. Long. lin. 10, lat. lin. 4.*
- Sp. 10. *Calosoma Australe. Nigro-æneum, thorace subcordato punctulato, posticè utrinque fortiter impresso; elytris nigro-æneis, confertim punctato-striatis, punctis subæneis in triplici serie ordinatis. Long. lin. 10, lat. lin. 3½.*

Fam. HETEROMORPHIDÆ, Hope.

Silphomorpha, Westwood.

- Sp. 11. *Sil. Orectocheiloides, Hope. Corpore suprà nigro-piceo lateribus thoracis marginibusque elytrorum pallidioribus, infrà brunneo-picea, antennis pedibusque concoloribus. Long. lin. 6¼, lat. lin. 2¼.*
- Sp. 12. *Adelotopus Fortnumi, Hope. Niger, marginibus lateralibus thoracis piceis, palpis ferrugineis; corpus infrà atro-piceum, segmentis abdominis posticè brunneo-piceis, pedibus concoloribus. Long. lin. 3½, lat. lin. 1½.*

Fam. HARPALIDÆ.

Acinopus, Ziegler.

- Sp. 13. *Ac. Australis*, Hope. *Niger, thorace magno, transversè subrugoso, marginibus externis thoracis posticè latè cupreis; elytris ferè glabris, marginibus subaneis et punctatis.* Long. lin. 9, lat. lin. $2\frac{1}{2}$.

Fam. BYRRHIDÆ.

- Sp. 14. *Anthrenus Australis.* *Niger, capite atro, thorace medio concolori marginibus externis albis; elytris tribus fasciis undatis albis; corpore infrà nigro.* Long. lin. $1\frac{1}{4}$, lat. lin. $\frac{1}{2}$.

Fam. MELYRIDÆ.

- Sp. 15. *Dasytes nigricans*, Hope. *Ater pubescens, thorace longioribus capillis obsito; elytris atro-brunneis marginibus externis pallidioribus.* Long. lin. $1\frac{3}{4}$, lat. lin. $\frac{3}{4}$.
- Sp. 16. *Dasytes fuscipennis.* *Ater, antennis rubris; thorace pubescente, nigro; elytris fusco-testaceis punctatis, pedibus concoloribus.* Long. lin. $1\frac{3}{4}$, lat. lin. $\frac{3}{4}$.

Fam. PSELAPHIDÆ.

Articerus, Dalman.

- Sp. 17. *Articerus Fortnumi.* *Sanguineus, capite elongato-ovato fronte rotundato; thorace ferè quadrato, angulis anticis rotundatis, medio impresso; elytris thorace latioribus marginibus posticis nigricantibus; abdomine posticè rotundato utrinque macula nigra insignito.* Long. lin. $\frac{1}{2}$, lat. lin. $\frac{1}{4}$.

Mr. Evans communicated a notice relative to an exotic species of caterpillar of large size and black colour with red spots, the hairs of which are so rigid that they penetrate into the flesh when incautiously handled, causing much pain and inflammation.

Mr. Westwood stated that he had recently acquired the greater part of Latreille's original collection of bees from the Abbé Blondeau, by whom it had been purchased at the sale of the collection of Baron Déjean.

Mr. Edward Doubleday (in allusion to Mr. Saunders's paper) stated that in North America he had observed that the cotton plants are not attacked by any of the *Tineidæ*, but that they suffer greatly from the attacks of several species of *Noctuidæ*.

BOTANICAL SOCIETY OF EDINBURGH.

February 9, 1843.—Professor Graham in the Chair.

Professor Graham then read a highly interesting account of his botanical excursion in Ross-shire, during August 1842, with a party of friends:—

The party left Edinburgh on the 21st of August, and met at Dingwall—thence they walked by Garve, Auchnalt, &c. for Kinlochewe. On the low hills near Garve they found a sprinkling of alpine vegetation, and *Nymphæa alba*, beautifully in flower, in a pool near the top of

one of them, at a higher elevation than had been previously observed. The season having been remarkably dry, all the lakes were far below their usual level, and in consequence such plants as *Lobelia Dortmanna*, *Subularia aquatica*, &c. were seen, wondering at each other, in flower and fruit, on dry ground. Things, however, were now changed, for the party had scarcely a dry day during the whole of their excursion, and few such as admitted of the vegetation being carefully examined. Several days were spent among the mountains about Loch Maree, which are chiefly composed of red sandstone, with quartz tops, and by no means prolific in interesting vegetation. *Cornus suecica*, *Saussurea alpina*, *Hieracium alpinum*, *Rubus Chamemorus*, *Arbutus alpina*, *Azalea procumbens*, *Cherleria sedoides*, *Sibbaldia procumbens*, &c. were among the rarest plants observed; and rather unusually, all the six *Lycopodiæ* were picked nearly in one spot. *Tofieldia palustris*, *Thalictrum alpinum* and *Malaxis paludosa* occurred at the bottom of the cliffs, and *Salix herbacea* was found sparingly on the red sandstone below the summit cliffs of Ben Tarshan. Opposite Applecross, in a bog which the tide could seldom reach, were picked specimens of *Blysmus rufus* two feet high. Here there is an extent of limestone country, easily recognised at the distance of several miles by a marked improvement in the pasturage. On it the party met with *Schænus nigricans*, *Gentiana amarella*, *Listera ovata* and *Epipactis latifolia*, with pale flowers, but searched in vain for *Dryas octopetala*, which occurs profusely in similar soils in Sutherland. In an old deserted garden between Sheildag and Janetown they observed *Althæa officinalis*, *Aconitum Napellus* and other introduced plants. They also saw near Janetown *Ulex europæus* (a rare plant in the west of Ross-shire) growing freely, and producing abundance of seed, and the elder seemed to thrive peculiarly well. The mountains at the head of Loch Duich seemed to the party the finest they had seen, more magnificent even than those at the head of Loch Torridon, which again were more imposing than the much-extolled, and certainly very superb, groups bordering Loch Maree; but differences in the weather might have had some influence on the effect produced.

Proceeding southward, the party enjoyed one fine day at Clunie, and examined with considerable attention some very promising mountains to the south-west of the inn. These are crumbling and micaceous, but want elevation to produce alpine plants, and the mildness of the western climate renders that all the more necessary. The only interesting vegetable feature was an immense profusion of *Saussurea alpina*; though in spring, before vegetation gets rank, it is not unlikely that these cliffs might be found more productive. A patch of snow observed on the south side of Maamsool, a mountain about twenty miles north of Clunie, made the party desirous of visiting it; but here again the weather baffled their intentions. The party took Ben Nevis on their route, but the same cause rendered them unable to examine as they wished its magnificent cliffs. They, however, picked some interesting plants, and among the rest *Carex saxatilis*, but only in one spot.

In concluding his remarks, Dr. Graham observes:—"The scenery

we passed in the west of Ross-shire was magnificent; and in fine weather, if ever such shall occur in that district, it may occasion less disappointment, botanically, than we experienced. The disappearance of the forests from this and a great part of the Highlands of Scotland is a phenomenon which I cannot account for. Certainly it is not a change of climate, for in many districts the forests have perpetuated themselves by their own seedlings; and even where they have not, solitary seedlings of Scotch fir, birch and poplar occasionally spring up and thrive. It could not have been that the trees were cut for the purposes of the population, for the population is, and always must have been, from want of food, very limited. Fir is the only natural agent I can think of which was capable of effecting such destruction, but the remains of the trees have no appearance of having been burnt; and I doubt whether any of my companions, after our experience in a season which has parched up all of Scotland except the district we were in, will believe they ever could have been long enough dry to burn.

A letter to Professor Graham from Mr. N. B. Ward, F.L.S., on the introduction of the *Musa Cavendishii* into the Navigator Islands, was read:—

“When Mr. Williams was about to leave England in 1839 for the Navigators, he was anxious to take with him some useful plants, and particularly the *Musa*. He inquired of me whether I thought that it would travel safely in one of the glazed cases, and having received an answer in the affirmative, he applied to his Grace the Duke of Devonshire, who kindly gave him a healthy young plant. Mr. Williams left England on the 11th of April 1839, and arrived at Upolu, one of the Navigator Islands, at the end of the following November. The *Musa* bore this long voyage well, and was transplanted into a favourable situation soon after its arrival. In May 1840 it bore a fine cluster of fruit, exceeding 300 in number, and weighing nearly a hundred-weight. The parent plant then died, leaving behind more than thirty young ones. These were distributed to various parts of the island, and in the following May (1841) when Mrs. Williams left the island, all of these were in a fructiferous state, and producing numerous off-sets. Supposing the plants to continue to increase in the same ratio, there will be in the ensuing May (of 1843) more than 800,000 of them, and as the son of Mr. Williams is established as a merchant at Upolu, is owner of two vessels constantly employed in trading between the various islands in the South Pacific, and is moreover actuated by the same benevolent disposition which was a striking characteristic of his late father, there cannot be a doubt, but that, in a very short time, they will be common in all the islands. To estimate the importance of the introduction of this plant, we must bear in mind the great quantity of nutritious food furnished by the Banana. Humboldt has told us that he was never wearied with astonishment at the smallness of the portion of soil, which, in Mexico and the adjoining provinces, would yield sustenance to a family for a year, and that the same extent of ground, which in wheat would maintain only two persons, would yield sustenance under the Banana to fifty, al-

though in that favoured region the return of wheat is never under seventy, and sometimes as much as a hundred-fold. The return, on an average, in Great Britain, is not more than nine for one."

Mr. Ralf's paper on the *Diatomaceæ*, No. 3, was then read, containing descriptions of the genera *Striatella Tessella* and *Tetra cyclas*.

"On the Development of Leaves;" by Dr. Dickie, Lecturer on Botany, King's College, Aberdeen. The author concluded by stating, "that it cannot be said that the forms of leaves in flowering plants have any dependence whatever on their venation, since young leaves are lobed, &c. previous to the appearance of the veins. The truth appears to be, that the quantity of cellular tissue in a leaf determines the development and positions of the veins, and not the opposite."

GEOLOGICAL SOCIETY.

June 29, 1842.—A paper "On the Fossil Foot-prints of Birds and Impressions of Rain-drops in the Valley of the Connecticut." By Charles Lyell, Esq., V.P.G.S.

The deposit in which these impressions, long known on account of the researches of Prof. Hitchcock, occur, is situated in a trough of hypogene rocks, about five miles broad, the strata, which consist of sandstone, shale and conglomerate, dipping uniformly to the east at angles that vary from 5° to 30° . Mr. Lyell first examined the red sandstone at Rocky Hill, three miles south of Hartford, in Connecticut, where it is associated with red shale and capped by twenty feet of greenstone. Many of the beds are rippled, and cracks in the shale are filled by the materials of the superincumbent sandy layer, showing, the author observes, a drying and shrinking of the mud while the accumulation of the strata was in progress. The next quarries he examined were at Newark in New Jersey, about ten miles west from New York city. The excavations are extensive, and the strata dip, as is usual in New Jersey, to the north-west, or in an opposite direction to the inclination in the valley of Connecticut, a ridge of hypogene rocks intervening. The angle is about 35° near Newark. The beds exhibited ripple-marks and casts of cracks, also impressions of rain-drops on the upper surface of the fine red shales. Mr. Lyell states, that he felt some hesitation respecting the impressions first assigned to the action of rain by Mr. Cunningham of Liverpool, but he is now convinced of the justness of the inference, having observed similar markings produced on very soft mud by rain at Brooklyn in Long Island (New York). On the same mud were the foot-prints of fowls, some of which had been made before the rain and some after it.

Mr. Lyell next visited the red and green shales of Cabotville, north of Springfield in Massachusetts, where some of the best Ornithichnites have been procured, chiefly in the green shale. The dip of the beds is 20° to the east, a higher inclination, the author says, than could have belonged to a sea-beach. He observed in the same quarries ripple-marks as well as casts of cracks, and he was informed that the impressions of rain-drops have likewise been found.

In company with Prof. Hitchcock, Mr. Lyell afterwards examined a natural section near Smith's Ferry, on the right bank of the Con-

necticut, about eleven miles north of Springfield. The rock consists of thin-bedded sandstone with red-coloured shale. Some of the flags are distinctly ripple-marked, and the dip of the layers on which the *Ornithichnites* are imprinted, in great abundance, varies from eleven to fifteen degrees. Many superimposed beds must have been successively trodden upon, as different sets of tracks are traced through a thickness of sandstone exceeding ten feet; and Prof. Hitchcock pointed out to the author that some of the beds exposed several yards farther down the river, and containing *Ornithichnites*, would, if prolonged, pass under those of the principal locality, and make the entire thickness throughout which the impressions prevail, at intervals, perhaps twenty or thirty feet. Mr. Lyell, therefore, conceives that a continued subsidence of the ground took place during the deposition of the layers on which the birds walked.

It has been suggested, but the opinion has not been adopted by Prof. Hitchcock, that the eastward slope of the beds represents that of the original beach. With a view to this question, Mr. Lyell examined the direction of the ripple-marks, and found that it agreed with the dip, or was at right angles to the supposed line of beach; but he adds, though this agreement presents a formidable objection to the suggestion above alluded to, if the ripples were produced by waves, yet it does not disprove the opinion, as the ripples do not exceed in dimensions those which are produced by sand blown over a muddy beach, and often distributed at right angles to the coast-line. Instances of this effect of the wind Mr. Lyell has remarked along the shores of Massachusetts. Nevertheless he is of opinion that the rippled layer of sandstone in question contains too much clay to have resulted from blown sand, and he is disposed to think that in most of these localities the strata have been tilted, instances of such disturbance having been pointed out to him by Prof. Hitchcock in the state of Massachusetts, and by Mr. Percival near Newhaven in Connecticut. In reference to this subject, he says, that a few miles from Smith's Ferry a conglomerate, several hundred feet thick, containing angular and rounded fragments of trap and red sandstone, the base being sometimes a vesicular trap and trap tuff, passes upwards into the very flags on which *Ornithichnites* occur; and from this he infers, that there were eruptions of trap, accompanied by upheaval and partial denudation, during the deposition of the red sandstone.

With respect to the impressions having been made by birds, Mr. Lyell states, that until he examined the whole of the evidence he entertained some scepticism, notwithstanding the luminous account given by Prof. Hitchcock. In proof of their being the foot-prints of some creature walking on mud or sand, he mentions, 1st, the fact of Prof. Hitchcock's having seen 2000 impressions, all, like those he had himself examined, indented in the upper surface of the layer, the casts in relief being always on the lower surface; and 2ndly, that where there is a single line of impressions the marks are uniform in size, and nearly uniform in distance from each other, the toes in the successive steps turning alternately right and left. Such single lines, Mr. Lyell says, indicate that the animal was a biped, and the trifold marks resemble those which a bird leaves, there being generally a

deviation from a straight line in any three successive prints ; and his attention having been called to indications of joints in the different toes, he afterwards clearly recognised similar markings in the recent steps of coots and other birds on the sands of the shores of Massachusetts. Prof. Hitchcock has shown, that the same impression extends through several laminae, decreasing in distinctness in proportion as the layer recedes from that in which it is most strongly marked, or in proportion as the sediment filled up the hollows and restored the surface to a level ; and Mr. Lyell states, that he has observed a great number of instances of this fact.

He also says, that he can scarcely doubt that some of the impressions on the red sandstone of Connecticut are not referable to birds, but he believes that the gigantic ones described by Prof. Hitchcock are Ornithichnites. At Smith's Ferry they are so numerous that a bed of shale many yards square is trodden into a most irregular and jagged surface, so that there is not a trace of a distinct footprint ; but on withdrawing from this area to spots where the same tracts are fewer, the observer, Mr. Lyell says, is forced to admit that the effect in each case has been produced by this cause.

On examining the shores on some small islands about fifteen miles south-east from Savannah, the author was struck with the number as well as the clearness of the tracks of raccoons and opossums imprinted in the mud during the four preceding hours, or after the tide had begun to ebb. At one spot, where the raccoons had been attracted by the oysters, the impressions were as confused as when a flock of sheep has passed over a muddy road ; and in consequence of a gentle breeze blowing parallel to the line of cliffs composed of quartzose sand, the tracks had in many places already become half-filled with blown sand, and in others were entirely obliterated ; so that if the coast should subside, the consolidation of this sand would afford casts analogous to those of Storeton Hill in Cheshire, yet the impressions had been made and filled in a few hours.

When considering the broad question whether the fossil foot-prints were made by creatures walking on mud or sand after the ebbing of the tide, Mr. Lyell reminds his readers of the fact that in the United States, as in Saxony and Cheshire, the tracks in sandstone and shale are accompanied by littoral appearances, as ripple-marks, the casts of cracks in the clay, and often by the marks of rain.

In regard to the age of the red sandstone of the valley of the Connecticut and New Jersey, the author states he has nothing to add to what had been previously advanced, by which its position had been shown to be between the carboniferous and cretaceous series. In the neighbourhood of Durham, Connecticut, he had collected in the sandstone, fishes of the genera *Palæoniscus* and *Catopterus*, but no other organic remains, except fossil wood.

In conclusion, Mr. Lyell remarks, 1st, that the Ornithichnites of Connecticut should teach extreme caution in inferring the non-existence of land animals from the absence of their remains in contemporaneous marine strata ; 2ndly, that when this red sandstone of Connecticut was deposited, there was land in the immediate vicinity of the places where the Ornithichnites occur ; and that but for

them it might naturally be inferred that the nearest land was several miles distant, namely, that of the hypogene rocks which bound the basin of the Connecticut. Now, the land that caused the sea-beach, Mr. Lyell says, must have been formed of the same sandstone which was then in the act of accumulating, in the same manner as where deltas are advancing upon the sea.

In a postscript, Mr. Lyell states, that subsequently to writing the paper he had read the luminous report of Mr. Vanuxem on the *Ornithichnites* described by Prof. Hitchcock, and though it agrees in substance with his own account in some particulars, yet that he has left his notice as it stood.

MISCELLANEOUS.

ON THE PEARL OYSTER OF CEYLON.

“It may interest some of your conchological acquaintances to know that *Avicula radiata* of Leach is the far-famed Pearl Oyster of Ceylon. I have got plenty of all ages destined for the Belfast Museum. I send you a sketch* of the fry which roves about near the surface of the sea; it in scarcely any respect resembles the full-grown shell.”
Vide Nat. Misc., vol. i. pl. 43.—*Extract from R. Templeton's, Esq., R.A., letter from Colombo in Ceylon, May 19, 1842.*

FOSSIL REMAINS IN ESSEX.

To the Editors of the Annals of Natural History.

GENTLEMEN,—Fossil remains of Mammalia have been met with so often in the county of Essex that their occurrence now almost ceases to excite surprise, but a large portion of a fossil tusk of the elephant has very recently been found at Grays Thurrock, of dimensions so large as to favour the impression, that the animal to which it formerly belonged must have arrived at the maximum size of those giants of the animal kingdom.

This fine fossil in its present state is two feet eleven inches in length; it is broken off at both ends, and appears to have formed the middle third part of the tusk in length. At its larger extremity it is $19\frac{1}{2}$ inches in circumference, and when it is considered that no part of the cavity forming the alveolus can be seen, that portion being broken off and with it more of the larger end of the tusk probably;—bearing this in mind, we may fairly infer that the tusk was quite as long as our conclusions warrant in drawing from the facts before us.

At its smaller end it is broken off at that part which gives us fifteen inches circumference, and as to its length, by following the two outer curvatures of this fragment to a point, these lines meet at a distance of about three feet from the smaller circumference; and if we allow little more than two feet from its larger end for the alveolus and other missing portions, we then have a length of between eight and nine feet when this tusk was whole.

* The figure will be given in one of the Plates of our present volume.—ED.